

BIOLOGICAL EVALUATION
ENGELMANN SPRUCE BEETLE INFESTATION

FISHLAKE NATIONAL FOREST

REGION FOUR

UTAH

1971

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At present there are two widely separated Engelmann spruce beetle infestations on the Fishlake National Forest. The first and most recent one is on the Beaver Ranger District (Big Flat). The second infestation, considerably older, is on the Loa Ranger District (Hilgard Mountain) some 50 air miles to the northeast. Both infestations were detected during the aerial detection survey. The long standing Hilgard Mountain infestation has been under surveillance since 1967^{1/}. The Big Flat infestation was detected and mapped in 1970 but did not reach concernful proportions until 1971. It was mapped from the air during a July 19 detection flight.

On July 20 and 21, 1971, Entomologist William Klein examined both infestations. On July 21 he was accompanied by Loa District Ranger Roderick Howard.

Both infestations were triggered and nurtured by excessive windthrow. The Hilgard infestation is, for the most part, on the decline due to a lack of suitable host material. Most of the trees over 12 inches d.b.h. have been killed. The recent Big Flat outbreak is on the increase, and unless natural factors intervene, serious tree killing will continue. No control is recommended for the Hilgard infestation, but a coordinated trap tree program undertaken in the Big Flat outbreak may reduce future losses.

^{1/} Forest Insect Conditions on the Fishlake National Forest, 1967.
5pp. (map).

GENERAL INFORMATION

Insect - Engelmann spruce beetle, Dendroctonus rufipennis Kirby.

Host Tree - Engelmann spruce, Picea engelmannii Parry.

Location - Big Flat and Hilgard Mountain areas, Fishlake National Forest, Utah. See appended map.

Type of Damage - Killing of Engelmann spruce over 12" d.b.h.

Extent of Infestation - Tree killing by the spruce beetle is occurring Forestwide within the Engelmann spruce type; however, the heaviest concentrations are in the two before-mentioned areas.

BIOLOGICAL INFORMATION

Big Flat - An on-the-ground examination was made of several areas along the Puffer Lake, Kent Lakes Road, and near several old clearcut areas on the Cullen Creek Road.

Standing tree attacks had occurred throughout the entire area with the heaviest concentration existing between Big Flat Guard Station and Puffer Lake. Although there was scattered logging debris in many of the cutover areas, it was, for the most part, of small diameter and had produced very little, if any, spruce beetle emergence. Some windfall had occurred along the edge of the clearcuts and this material contained numerous emergence holes. It was evident that this material contributed somewhat to the heavier buildup in this area, but it was not primarily responsible for the overall infestation. The infestation was triggered and nurtured by an accumulation of scattered windfall and snowbreak that has been occurring for the past two and three years. This appears to be just one part of an overall upward trend of spruce beetle activity in high elevation spruce that has been developing throughout north-central Utah during the past two years.

The infested trees were generally the largest trees in the stand. Winter woodpecking activity was prevalent in most of the trees, but it was neither heavy nor effective enough to offset heavy brood numbers. Brood stage varied from newly deposited eggs to young (tenerals) adults. In several instances, these two widely separated life stages were found in the same trees. Many of the infested trees were still green while a few had lost most of their foliage. Broods were abundant and were classed as heavy.

No unusual evidence of predation or parasitism was observed.

Hilgard Mountain - In company with Ranger Howard, an examination was made of an area south of the summit of Hilgard Mountain. This stand was badly depleted by the beetle. Very few spruce of large diameter remained. The residual stand consisted mainly of spruce 12" d.b.h. and under and subalpine fir.

Both past and recent windfall activity was observed throughout the affected stand. More windfall will likely occur because of the open stand conditions imposed by past and recent spruce beetle activity.

Brood stage and condition was similar to that in the Big Flat area, but since only small trees were infested, broods were less plentiful.

DISCUSSION

Brood that are large larvae, pupae, and young adults now will emerge this fall, migrate to the base of the tree around the root collar, overwinter, and reemerge next spring or early summer. The insects that are now in the egg stage will, in most probabilities, take two years to mature and will not emerge until 1973. There is also a possibility that some individuals will take three years to develop. This staggered development only complicates a control decision.

It was decided in 1967 not to attempt to control the Hilgard infestation. The decision entailed many factors, but the foremost reasons were: (1) the inoperability of most of the area and (2) the lack of a ready market. Although there has been some attempt at salvage, and at least one small sale has been made, at this date no logs have been removed. The stand is so badly depleted now that it is considered unmerchantable. Control at this late date is out of the question. Because of the scattered nature of the spruce type in this area, it is doubtful that it poses a threat to the distant, surrounding stands.

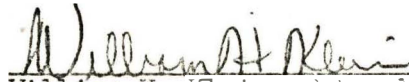
A very different situation exists in the Big Flat infestation. The beetle is just starting to build up and the area contains an abundance of mature and overmature spruce. Past logging has helped remove susceptible timber in local areas, but the overall effect of tree removal by logging on total stand structure has had nil effect in reducing overall beetle susceptibility. If this infestation is left unchecked and natural control factors do not intervene, most of the larger trees will eventually be killed. The Hilgard area can serve as an example of the consequences of no control.

RECOMMENDATION

Various control alternatives of the Big Flat infestation were discussed during the morning of July 22 with Supervisor Reed Christensen and Timber Management Branch Chief Ralph Cisco. Chemical control was ruled out because of the scattered nature of the infestation, its cost, and most important, its questionable effectiveness. Salvage logging was discussed, and although it would utilize infested and dead material, it would not prevent a population increase and subsequent tree losses. The only practical alternative appeared to be a coordinated trap tree program. The details of such a program were not discussed but will probably entail falling groups of trees at specified intervals and removing them after they become infected. The tree groups would have to be accessible from existing roads for ease of removal and a special clause may have to be inserted in the timber sale contract to insure their removal by a given date. Because of the variable brood condition, a program of this type will have to be carried through for two consecutive years.

In the event such a program is decided upon, entomologists from the Division of Timber Management will provide assistance in all of the technical and evaluation phases.

Prepared by:



William H. Klein, Entomologist
Branch of Forest Pest Control

Recommended by:



A. M. Rivas
Branch of Forest Pest Control

Approved by:

M. C. GALBRAITH

Marlin C. Galbraith
Assistant Regional Forester

Fishlake

BEAVER RANGER DISTRICT

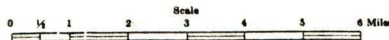
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FISHLAKE NATIONAL FOREST

UTAH

SALT LAKE BASE AND MERIDIAN

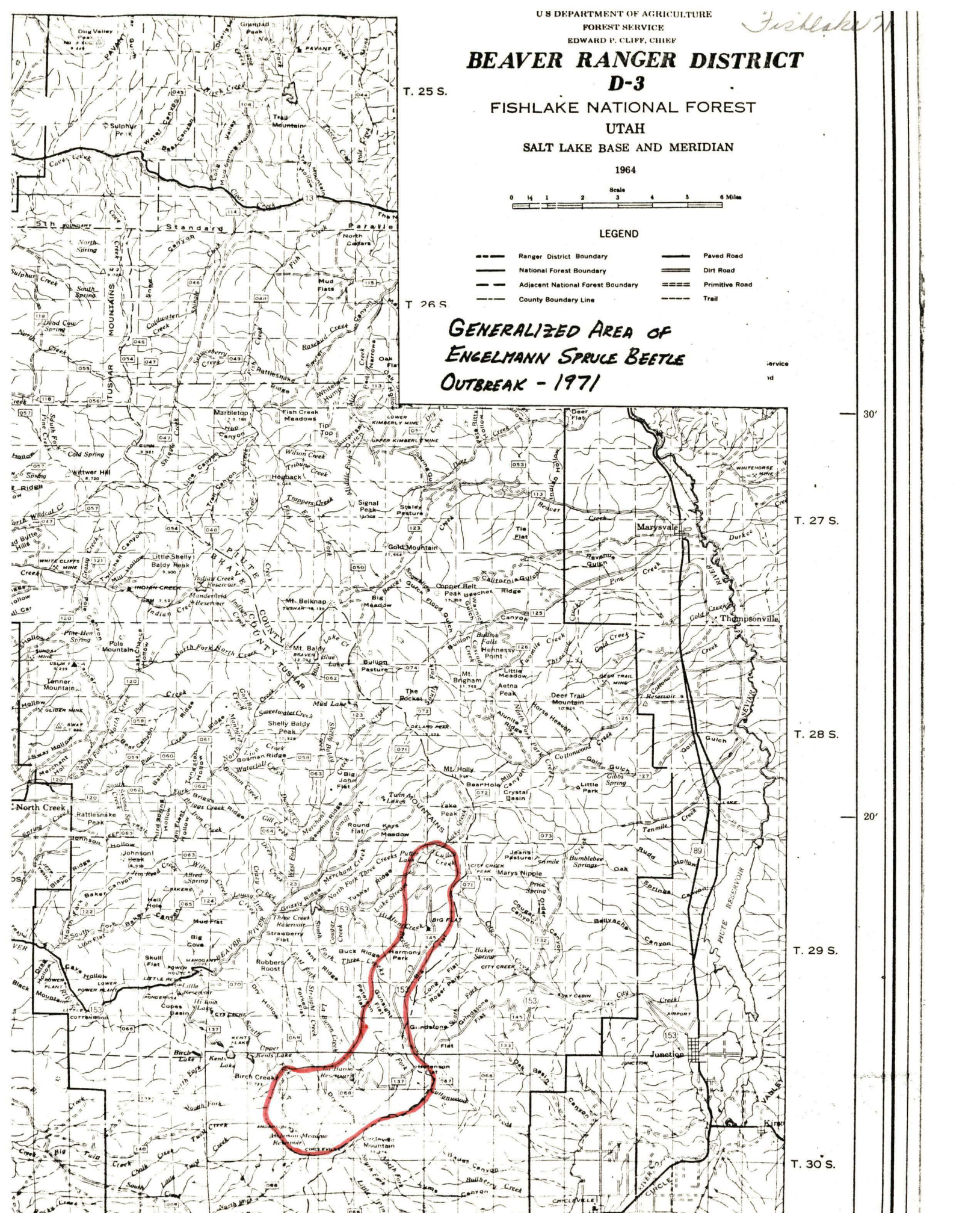
1964



LEGEND

- | | |
|---------------------------------------|-------------------|
| --- Ranger District Boundary | == Paved Road |
| --- National Forest Boundary | == Dirt Road |
| --- Adjacent National Forest Boundary | == Primitive Road |
| --- County Boundary Line | --- Trail |

GENERALIZED AREA OF
ENGELMANN SPRUCE BEETLE
OUTBREAK - 1971



U.S. DEPARTMENT OF AGRICULTURE
FOREST SERVICE
EDWARD P. CLIFF, CHIEF

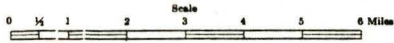
LOA RANGER DISTRICT

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FISHLAKE NATIONAL FOREST
UTAH
SALT LAKE BASE AND MERIDIAN

1964

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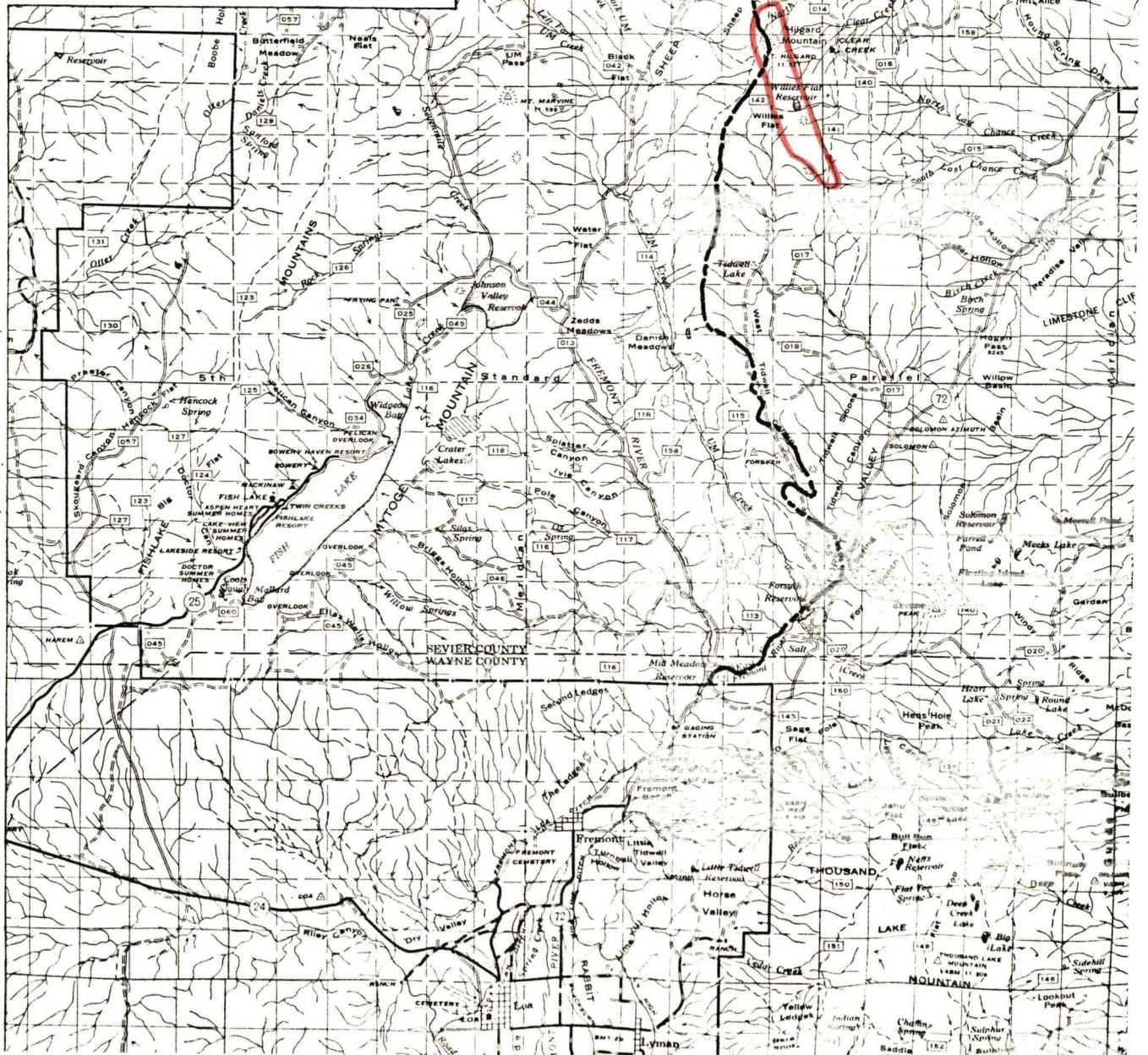
LEGEND

- | | |
|---------------------------------------|--------------------|
| --- Ranger District Boundary | == Paved Road |
| --- National Forest Boundary | == Dirt Road |
| --- Adjacent National Forest Boundary | == Primitive Road |
| --- County Boundary Line | --- Trail |
| --- Forest Supervisor's Headquarters | --- Telephone Line |

**GENERALIZED AREA OF
ENGELMANN SPRUCE BEETLE
OUTBREAK - 1971**

R. 1 E.

R. 2 E.



R. 3 E.

R. 4 E.